Risk and Worry as Predictors of Cancer Screening Behavior: Results Using HINTS Data

HINTS Data Users Conference

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Richard P. Moser, Ph.D.[1], Kevin McCaul, Ph.D.[2],
Ellen Peters, Ph.D.[3], Wendy Nelson, Ph.D.[1],
Stephen Marcus, Ph.D.[1]

[1]NCI [2]North Dakota State University
[3]Decision Research/University of Oregon

The Role of Susceptibility

- Key concept in Health Belief Model
- A *cognition*; can be assessed in several ways (Weinstein et al.) e.g.:
  - Risk: Comprehension of the **likelihood** (probability/chance) of developing a disease
- As *affect*
  - Importance in decision making (Loewenstein et al., 2001)
  - Worry:
    - Signifies importance
    - Serves as salient reminder through rumination
    - Motivates planning
- Both related to cancer screening (e.g., McCaul et al., 1996)

Health Behavior Outcomes: Cancer Screening

- Reduces disease-related morbidity and mortality
- Increases cancer survival rates for certain types of cancer
- ACS/USPSTF Current screening guidelines
- Coded for analyses:
  - Regular/Not Regular
    - Mammography (Breast)
    - FOBT (Colorectal)
  - Lifetime (Yes/No)
    - Sigmoidoscopy
    - Colonoscopy
    - PSA

Analysis Plan

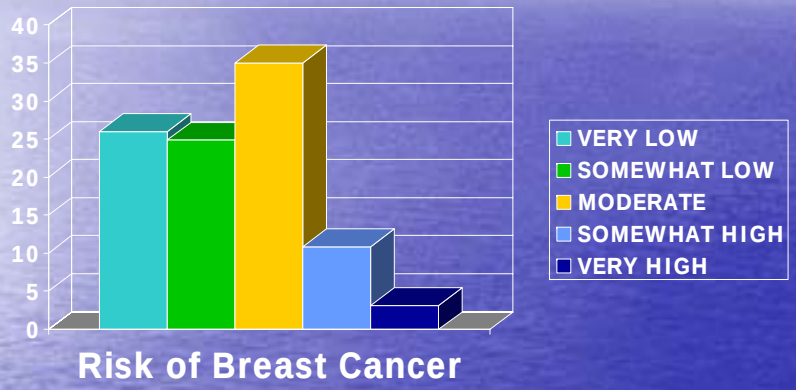
- Hierarchical Logistic Regression
  - Predictors of interest-three blocks:
    - 1) Sociodemographic variables
      - Gender (where appropriate)
      - Education
      - Race/Ethnicity
      - Age
    - 2) Access to Care
      - Health care coverage
      - Regular provider
    - 3) Risk, Worry and interaction
- Other
  - Log likelihood analyses for nested models
  - Correlate risk/worry

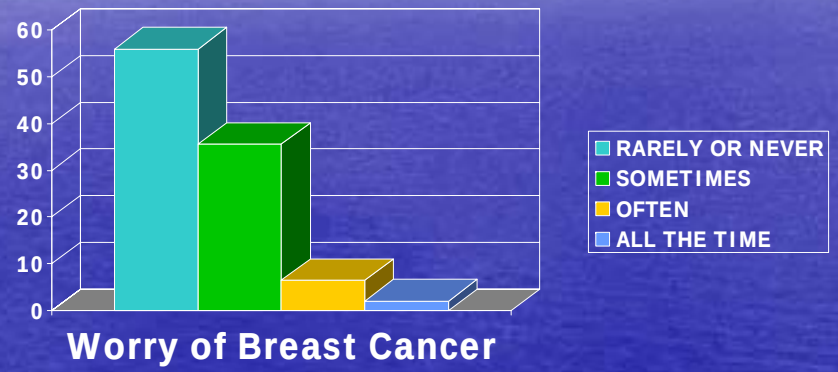
Results: Correlations Between Cancer Risk and Worry*

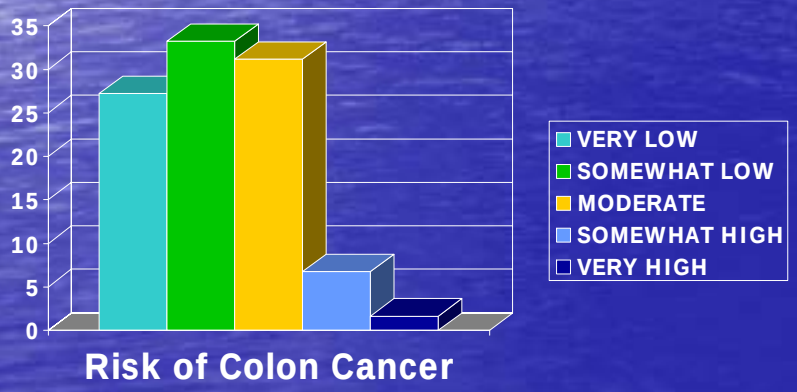
- Breast Cancer: $r = .42$
- Colorectal Cancer: $r = .37$
- Prostate Cancer: $r = .34$

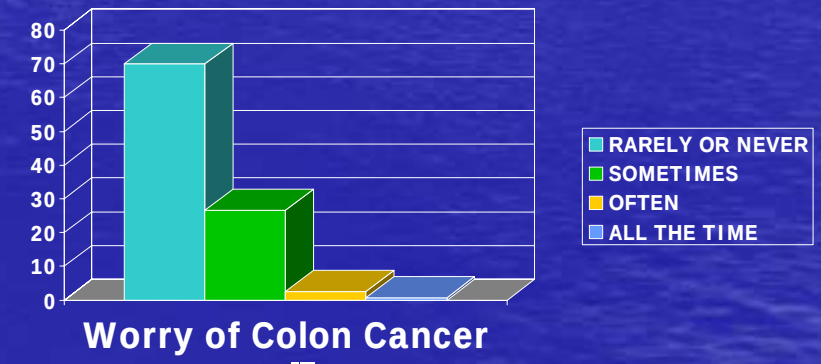
*all significant at $p < .05$

Distribution of Risk/Worry Responses

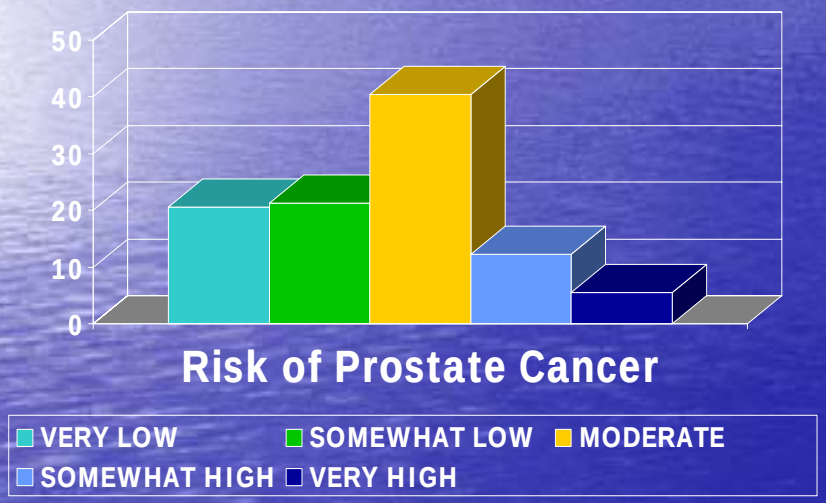


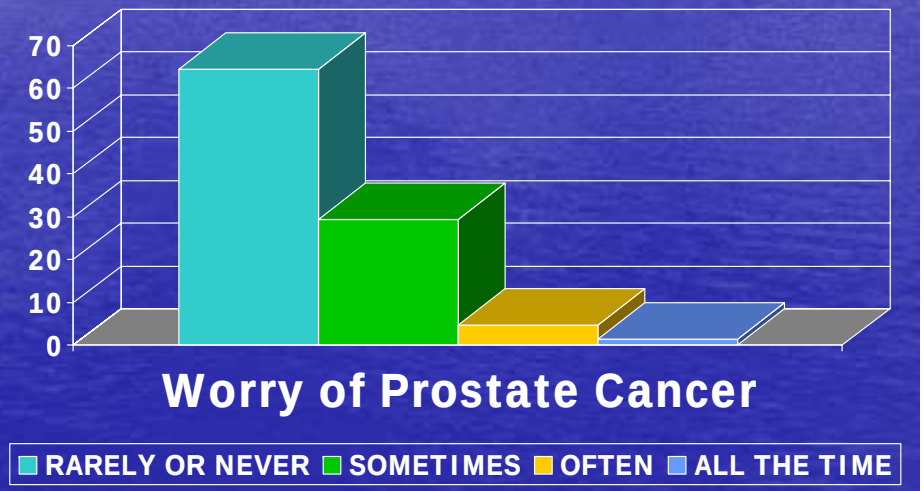






Distribution of Risk/Worry Responses (cont.)





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Outcome: Regular/Not Regular Mammography Screening (n=2150)

Variable	OR	95% CI	Log Likelihood
Risk	**1.18**	**1.04 to 1.33**	
Worry	**1.30**	**1.03 to 1.63**	($p < .01$)
Risk x Worry	0.97	0.82 to 1.16	
Regular Provider			
Yes	2.81	1.95 to 4.06	
No	1.00	---	($p < .01$)
Health Care Coverage			
Yes	2.59	1.72 to 3.88	
No	1.00	---	
Age	1.01	1.00 to 1.02	
Education			
College Grad	2.17	1.41 to 3.33	
Some College	2.12	1.37 to 3.30	
High School Grad	1.71	1.07 to 2.73	
Less than High School	1.00	---	
Race/Ethnicity			
Other	1.05	0.77 to 1.43	
White	1.00	---	

Outcome: Ever/Never Sigmoidoscopy Screening (n=2078)

Variable	OR	95% CI	Log Likelihood
Risk	**1.16**	**0.99 to 1.35 (p<.06)**	
Worry	**1.32**	**1.03 to 1.69**	($p < .01$)
Risk x Worry	0.94	0.80 to 1.11	
Regular Provider			
Yes	1.86	1.35 to 2.55	
No	1.00	---	
Health Care Coverage			($p < .01$)
Yes	1.31	0.60 to 2.83	
No	1.00	---	
Age	1.03	1.02 to 1.05	
Education			
College Grad	2.90	1.87 to 4.51	
Some College	2.55	1.70 to 3.82	
High School Grad	1.21	0.79 to 1.85	
Less than High School	1.00	---	
Race/Ethnicity			
Other	0.91	0.62 to 1.35	
White	1.00	---	
Gender			
Male	1.38	1.05 to 1.82	
Female	1.00	---	

Outcome: Ever/Never Colonoscopy Screening (n=2079)

Variable	OR	95% CI	Log Likelihood
Risk	**1.23**	**1.09 to 1.38**	
Worry	**1.43**	**1.09 to 1.88**	($p < .01$)
Risk x Worry	0.94	0.80 to 1.11	
Regular Provider			
Yes	1.89	1.28 to 2.78	
No	1.00	---	
Health Care Coverage			($p < .01$)
Yes	2.15	1.34 to 4.08	
No	1.00	---	
Age	1.03	1.02 to 1.05	
Education			
College Grad	1.05	0.65 to 1.70	
Some College	1.06	0.69 to 1.64	
High School Grad	0.93	0.64 to 1.35	
Less than High School	1.00	---	
Race/Ethnicity			
Other	0.90	0.62 to 1.29	
White	1.00	---	
Gender			
Male	1.25	0.97 to 1.61	
Female	1.00	---	

Outcome: Regular/Not Regular FOBT Screening (n=1878)

Variable	OR	95% CI	Log Likelihood
Risk	0.88	0.73 to 1.05	
Worry	1.00	0.70 to 1.42	(Not significant)
Risk x Worry	1.12	0.90 to 1.41	
Regular Provider			
Yes	1.72	1.05 to 2.82	
No	1.00	---	($p < .01$)
Health Care Coverage			
Yes	1.83	0.71 to 4.74	
No	1.00	---	
Age	1.01	1.00 to 1.03	
Education			
College Grad	1.26	0.77 to 2.05	
Some College	1.27	0.73 to 2.18	
High School Grad	1.14	0.75 to 1.73	
Less than High School	1.00	---	
Race/Ethnicity			
Other	1.28	0.87 to 1.87	
White	1.00	---	
Gender			
Male	1.13	0.84 to 1.51	
Female	1.00	---	

Outcome: Ever/Never PSA Screening (n=617)

Variable	OR	95% CI	Log Likelihood
Risk	1.07	0.86 to 1.34	
Worry	1.33	0.81 to 2.17	(Not significant)
Risk x Worry	0.88	0.56 to 1.40	
Regular Provider			
Yes	3.64	2.02 to 6.57	
No	1.00	---	($p < .01$)
Health Care Coverage			
Yes	3.15	1.07 to 9.31	
No	1.00	---	
Age	1.06	1.02 to 1.11	
Education			
College Grad	0.81	0.30 to 2.21	
Some College	0.91	0.33 to 2.54	
High School Grad	2.06	0.74 to 5.74	
Less than High School	1.00	---	
Race/Ethnicity			
Other	0.73	0.36 to 1.49	
White	1.00	---	

Summary

- Both risk and worry are important predictors of some types of cancer screening
- Seem to operate independently; no interaction
- No curvilinear relationship with worry
- Do not predict FOBT/PSA screening; why not?

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